WHAT IS CLAIMED IS:

1. A process for forming layers in electronic devices comprising the steps of:

providing a reaction chamber;

placing a substrate in said reaction chamber;

pulsing a precursor fluid into said reaction chamber;

exposing said precursor fluid to light energy in said reaction chamber causing said precursor fluid to convert into a solid layer on said substrate; and

wherein said precursor fluid is substantially exhausted and removed from said reaction chamber in between each pulse of said precursor fluid.

2. A process as defined in claim 1, wherein said precursor fluid comprises a liquid vapor.

3. A process as defined in claim 1, wherein said precursor fluid comprises a gas.

4. A process as defined in claim 1, wherein said substrate comprises a semiconductor wafer.

5. A process as defined in claim 1, further comprising the step of heating said substrate with an electrical resistance heater during formation of said layer.

6. A process as defined in claim 1, wherein said reaction chamber has walls maintained at a temperature lower than said substrate during formation of said layer.

7. A process as defined in claim 1, wherein said light energy is supplied by light energy sources positioned outside said reaction chamber.

8. A process as defined in claim 1, further comprising the step of maintaining said reaction chamber at less than atmospheric pressure when pulsing said precursor fluid into said reaction chamber.

9. A process as defined in claim 1, wherein said light energy is pulsed in substantial synchronization with said precursor fluid.

10. A process as defined in claim 1, further comprising the step of flowing an inert gas through said reaction chamber in between pulses of said precursor fluid in order to purge from said reaction chamber any precursor fluid not converted into a solid.

11. A process as defined in claim 1, wherein said solid layer comprises a dielectric material.

12. A process as defined in claim 1, wherein said solid layer comprises a conductive material.

13. A process as defined in claim 1, wherein said solid layer comprises zirconium oxide.

14. A process as defined in claim 1, wherein said precursor fluid comprises a hydride.

15. A process as defined in claim 1, wherein said solid layer comprises a material selected from the group consisting of tungsten, tungsten nitride, tantalum nitride, titanium nitride, copper, aluminum, ruthenium oxide, iridium oxide, and silver.

16. A process as defined in claim 1, wherein said solid layer comprises a material selected from the group consisting of zirconium oxide, aluminum oxide, a nitride, barium strontium titanate and a silicate.

17. A process as defined in claim 1, wherein said solid layer comprises zirconium hafnium oxide.

18. A process as defined in claim 1, further comprising the step of maintaining said reaction chamber at a pressure of less than about 5 torr when pulsing said precursor fluid into said reaction chamber.

19. A process as defined in claim 1, wherein said substrate is maintained at a temperature of at least 100°C during formation of said solid layer.

20. A process for forming layers in electronic devices comprising

the steps of:

providing a reaction chamber;

placing a semiconductor wafer in said reaction chamber;

heating said semiconductor wafer with a thermal heating device placed adjacent to said wafer;

pulsing a precursor fluid into said reaction chamber, said precursor fluid forming a solid layer on said semiconductor wafer;

thereafter exposing said solid layer to light energy in said reaction chamber; and

wherein said precursor fluid is substantially exhausted and removed from said reaction chamber and said solid layer is exposed to said light energy in between each pulse of said precursor fluid.

21. A process as defined in claim 20, wherein said precursor fluid comprises a gas.

22. A process as defined in claim 20, wherein said thermal heating device comprises an electrical resistance heater.

23. A process as defined in claim 20, wherein said reaction chamber has walls maintained at a temperature lower than said substrate during formation of said layer.

24. A process as defined in claim 20, further comprising the step of maintaining said reaction chamber at a pressure of less than about 760 torr when pulsing said precursor fluid into said reaction chamber.

25. A process as defined in claim 20, further comprising the step of maintaining said reaction chamber at a pressure of less than about 3 torr when pulsing said precursor fluid into said reaction chamber.

26. A process as defined in claim 20, further comprising the step of flowing an inert gas through said reaction chamber in between pulses of said precursor fluid in order to purge from said reaction chamber any precursor fluid not converted into a solid.

27. A process as defined in claim 20, wherein said solid layer

comprises a material selected from the group consisting of tungsten, tungsten nitride, tantalum nitride, titanium nitride, copper, aluminum, ruthenium oxide, iridium oxide, and silver.

28. A process as defined in claim 20, wherein said solid layer comprises a material selected from the group consisting of zirconium oxide, aluminum oxide, a nitride, barium strontium titanate and a silicate.

29. A process as defined in claim 20, wherein said semiconductor wafer is maintained at a temperature of at least 100°C during formation of said solid layer.

30. A process as defined in claim 20, further comprising the step of maintaining said reaction chamber at a pressure of from about 10^{-2} torr to about 10^{-7} torr when pulsing said precursor fluid into said reaction chamber.

31. A process for forming layers in electronic devices comprising the steps of:

providing a reaction chamber;

placing a semiconductor wafer in said reaction chamber;

pulsing a precursor fluid into said reaction chamber;

exposing said precursor fluid to light energy in said reaction chamber causing said precursor fluid to convert into a solid layer on said semiconductor wafer;

flowing an inert gas through said reaction chamber in between said pulses of said precursor fluid in order to purge from said reaction chamber any precursor fluid not converted into a solid;

annealing said solid layer by exposing said solid layer to light energy; and

wherein said precursor fluid is substantially exhausted and removed from said reaction chamber in between each pulse of said precursor fluid.

32. A process as defined in claim 31, wherein said precursor fluid

is first pulsed into said reaction chamber followed by a pulse of said inert gas, and wherein said light energy is emitted into said reaction chamber in synchronicity with said pulse of said precursor fluid and during said annealing step, but not during said pulse of said inert gas.

33. A process as defined in claim 31, wherein said semiconductor wafer is heated by a thermal heating device during formation of said solid layer, said thermal heating device being positioned adjacent to said wafer.

34. A process as defined in claim 31, further comprising the step of maintaining said reaction chamber at a pressure of less than about 5 torr when pulsing said precursor fluid into said reaction chamber.

35. A process as defined in claim 31, further comprising the step of maintaining said reaction chamber at a pressure of less than about 3 torr when pulsing said precursor fluid into said reaction chamber.

36. A process as defined in claim 31, wherein said precursor fluid comprises a mixture of gases.

37. A process as defined in claim 31, wherein said solid layer comprises a conductive material.

38. A process as defined in claim 31, wherein said solid layer comprises a semiconductive material.

39. A process as defined in claim 31, wherein said solid layer comprises a dielectric material.

40. A process as defined in claim 31, wherein said solid layer comprises a material selected from the group consisting of tungsten, tungsten nitride, tantalum nitride, titanium nitride, copper, aluminum, ruthenium oxide, iridium oxide, and silver.

41. A process as defined in claim 31, wherein said solid layer comprises a material selected from the group consisting of zirconium oxide, aluminum oxide, a nitride, barium strontium titanate and a silicate.

42. A process as defined in claim 31, wherein said semiconductor

wafer is maintained at a temperature of at least 100°C during said annealing step.

43. A process as defined in claim 31, further comprising the step of maintaining said reaction chamber at a pressure of from about 10^{-2} torr to about 10^{-7} torr when pulsing said precursor fluid into said reaction chamber.

44. A process as defined in claim 31, wherein said semiconductor wafer is maintained at a temperature of at least 100°C during formation of said solid layer.

45. A process as defined in claim 33, wherein said thermal heating device comprises an electrical resistance heater.

46. A process for forming layers in electronic devices comprising the steps of:

providing a reaction chamber;

placing a semiconductor wafer in said reaction chamber;

feeding a precursor fluid into said reaction chamber while said reaction chamber is at a pressure of less than 1 torr; and

exposing said precursor fluid to an energy source in said reaction chamber causing said precursor fluid to convert into a solid layer on said semiconductor wafer.

47. A process as defined in claim 46, further comprising the step of maintaining said reaction chamber at a pressure of from about 10^{-2} torr to about 10^{-7} when feeding said precursor fluid into said reaction chamber.

48. A process as defined in claim 46, wherein said energy source comprises light energy.

49. A process as defined in claim 46, wherein said energy source comprises a combination of light energy and thermal energy emitted by an electrical resistance heater.